

REMARKS***Disposition of Claims***

Upon entry of the foregoing amendments, claims 1-9 and 12-20 will be pending in the application and stand ready for further action on the merits. Independent claim 1 has been amended herein to recite that the first and second resins are thermosetting resins and the pressurized fluid is heated water. Dependent claims 12-14 have been amended in a similar manner so that they now are consistent with amended claim 1. Claims 10-11 have been canceled herein without prejudice or disclaimer of the subject matter contained therein. The amendments herein are fully supported by the specification particularly at Paragraphs 35, 37-40 and 44 and the originally filed claims. No new matter has been added to the application.

Claim Objections

The Office Action objects to claim 1, because the term, "thermosetting resins" in line 11 of claim 1 lacks sufficient antecedent basis. Claim 1 now has been amended so that the term, "thermosetting resin" appears in lines 3 and 5. Thus, the term, "thermosetting resins" in claim 1, line 11 now should be considered to have sufficient antecedent basis. In view of this amendment, it is respectfully requested that this objection to the claims be withdrawn.

Claim Rejections Under 35 U.S.C. §102

The Office Action rejects claims 1, 5-7, and 10 under 35 U.S.C. §102(b) in view of Barry, Published PCT International Application No. WO 97/08487 ("Barry"). Claim 1 has been amended herein to recite that the pressurized fluid, which causes the calibration hose to expand and press against the inner layer of the liner hose, is heated water. Claims 5-7 and 10 are dependent upon amended claim 1. Applicants submit that Barry does not anticipate the present invention, as recited in amended claims 1, 5-7, and 10, for the reasons discussed below.

Applicants agree with the Examiner that Barry discloses a method for rehabilitating existing pipelines which involves the steps of: a) providing a polyester felt

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tubular liner; b) feeding an air-inflatable bladder into the liner; c) impregnating the liner with a curable resin; d) coating the internal surface of the pipeline with a water-resistant adhesive coating; e) feeding the liner and bladder into the pipeline; f) inflating the bladder with compressed air; and g) maintaining the inflated bladder until the resin cures.

As the Examiner points out, the bladder is deflated and removed from the liner after the resin has been allowed to cure. The resulting liner structure is attached to the inner wall of the pipeline by means of the water-resistant adhesive (page 6, lines 15-21). It is submitted, however, that Barry does not disclose or suggest using pressurized heated water to inflate the bladder.

Applicant has found that pressurized heated water should be introduced into a calibration hose in accordance with his invention, because the heated water provides many advantages. (Claims 1-20, as set forth above, have been amended to recite this step.) Particularly, in Applicant's method, an operator can walk the calibration hose through the lining hose and neighboring pipeline sections by filling the calibration hose with water. As water is injected into the calibration hose, the hose moves easily down vertical pipeline sections, through joint connectors, and along horizontal pipeline sections. The pressurized heated water pushes the calibration hose against the lining hose and forces the lining hose outwardly so that it contacts and conforms to the shape of the internal walls of the pipeline. Moreover, the first and second thermosetting resins are slow-curing and do not cure in place until they are "triggered." The heated water triggers the curing of the first and second thermosetting resins. After this triggering step, the resins cure relatively quickly.

Barry fails to provide any suggestion or hint for using pressurized heated water to cure the resin and adhesive in his method. In fact, Barry teaches away from using a hot-curing system.

Known techniques typically use polyvinylchloride (PVC) lines which are hot-cured. The liner is fed into the existing pipe in a heated and softened form and then is further heated and expanded using pressurised steam to force the liner against the internal wall of the existing pipe. . . . Such systems have a number of disadvantages. They require expensive, specialised plant and equipment. . . . Hot cure systems are also susceptible to shrinkage both longitudinally and diametrically. (Page 1, line 15 - Page 2, line 5.)

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Barry is clearly interested in developing a cold-curing method for attaching the liner to the inside wall of the pipeline.

The present invention seeks to overcome or at least ameliorate the above problems associated with the prior art by providing a cold cure method of lining existing pipelines in situ. (Page 3, lines 6-8).

In the method described by Barry, a "cold cure resin" is mixed and introduced between the bladder and the felt liner such that the resin impregnates the liner material. (Page 6, lines 1-2). Barry does not teach a method that employs heat-curable first and second thermosetting resins or pressurized heated water to cure the resins. A person of ordinary skill in the art, looking to the teachings in Barry, would have no support for creating the presently claimed invention. Such a person would have to ignore the essential teachings in Barry and construct Applicant's claimed method in hindsight based on Applicant's own specification. It is respectfully submitted that such a construction is impermissible.

In summary, it is submitted that Barry does not disclose each and every element of amended claims 1-9 and 12-20 as required by an anticipatory reference. Accordingly, it is respectfully requested that the rejection of claims 1-9 and 12-20 (as amended) under 35 U.S.C. §102(b) in view of Barry be withdrawn.

Claim Rejections Under 35 U.S.C. §103

The Office Action makes several rejections to the claims under 35 U.S.C. §103(a) over the above-discussed Barry reference alone or in combination with other references. These rejections are addressed below.

First, the Office Action states that claims 15 and 20 are rejected under 35 U.S.C. §103(a) as being obvious over Barry.

Applicants submit that claims 15 and 20 are dependent upon amended claim 1, and they believe that claim 1 (as amended) is in condition for allowance per the reasons discussed above. Dependent claims 15 and 20 should also be allowed accordingly.

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Secondly, the Office Action states that claims 2-4 are rejected under 35 U.S.C. §103(a) as being unpatentable over Barry in view of Catallo, U.S. Patent 5,653,555 (Catallo '555).

Claims 2-4 are dependent upon amended claim 1, and it is submitted that claim 1 (as amended) is in condition for allowance per the reasons discussed above. Thus, dependent claims 2-4 should also be allowed.

The Barry reference is discussed in detail above. Regarding Catallo '555, Applicant agrees with the Examiner that this reference discloses a method of lining a pipe conduit using a flexible lining hose and calibration hose. The flexible lining hose has a resin-absorbent layer which is impregnated with a high-strength resin. A calibration hose having a resin absorbent layer is saturated with a corrosion-resistant resin. The calibration hose is placed within the lining hose and inverted by means of heated water so that the lining hose expands. But, Catallo '555 does not disclose or suggest applying a first heat-curable thermosetting resin to the interior surface of the pipeline. Also, in Catallo '555, the calibration hose is not removed from the liner (col. 8, lines 8-11).

In view of the foregoing, Applicant respectfully requests that the rejection of claims 2-4 under 35 U.S.C. §103(a) over Barry in view of Catallo '555 be withdrawn.

Thirdly, the Office Action states that claims 8, 9, and 11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Barry in view of Catallo, U.S. Patent 5,680,885 (Catallo '885).

Claims 8 and 9 are dependent upon amended claim 1, and it is submitted that claim 1 (as amended) is in condition for allowance per the reasons discussed above. Thus, dependent claims 8 and 9 should also be allowed. Claim 11 has been canceled herein.

The Barry reference is discussed in detail above. Regarding Catallo '885, Applicant agrees with the Examiner that this reference discloses a method of lining a pipe conduit using a flexible lining hose and calibration hose. The lining hose has a resin-absorbent layer which is soaked with an excess volume of resin. Applicant recognizes that Catallo '885 discloses inverting the calibration hose with heated water, but this step is

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conducted so that the resin-absorbent layer of the calibration hose can contact and adhere to the resin-coated layer of the lining hose. Catallo '885 does not disclose or suggest applying a first heat-curable thermosetting resin to the interior surface of the pipeline. Also, in Catallo '885, the calibration hose is not removed from the liner (col. 8, lines 19-22).

Accordingly, Applicant respectfully requests that the rejection of claims 8 and 9 under 35 U.S.C. § 103(a) over Barry and Catallo '885 be withdrawn.

Fourthly, the Office Action states that claims 12 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Barry in view of Zenbayashi et al., U.S. Patent 4,350,548 ("Zenbayashi").

Claims 12 and 13 have been amended herein to recite that the pressurized fluid is heated water making them consistent with amended claim 1. Claims 12 and 13 are dependent upon amended claim 1, and it is submitted that claim 1 (as amended) is in condition for allowance per the reasons discussed above. Thus, dependent claims 12 and 13 should also be allowed.

The Barry reference is discussed in detail above. Regarding Zenbayashi, this reference discloses a method for fixing a tubular liner to the inner surface of a pipeline. An adhesive binder such as an epoxy is applied to the inner surface of the liner. A flexible hose having a porous structure is inserted inside the liner. As the Examiner points out, pressurized steam is ejected through the pores. The steam accelerates the curing of the binder so that the liner can be attached to the inner surface of the pipe line. However, Zenbayashi fails to disclose or suggest the presently claimed method.

In view of the foregoing, it is respectfully requested that the rejection of claims 12 and 13 under 35 U.S.C. § 103(a) over Barry and Zenbayashi be withdrawn.

Fifthly, the Office Action states that claims 16-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Barry in view of Walker, U.S. Patent 6,703,091 ("Walker").

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Claims 16-19 are dependent upon amended claim 1, and it is submitted that claim 1 (as amended) is in condition for allowance per the reasons discussed above. Thus, dependent claims 16-19 should also be allowed.

The Barry reference is discussed in detail above. Regarding Walker, this reference discloses a method of applying a structural lining system to the interior surface of a pipe. First, a layer of adhesive is applied onto the interior surface of a previously cleaned pipe. Next, strips of hoop-shaped carbon fiber material are allowed to uncoil within the pipe. A final epoxy coating is sprayed over the strips, forming an internal liner for the pipe. There is no disclosure or suggestion in Walker for a method that uses a flexible lining hose and calibration hose. The method disclosed by Walker is completely different than the presently claimed method.

In view of the foregoing, it is respectfully requested that the rejection of claims 16-19 under 35 U.S.C. §103(a) over Barry and Walker be withdrawn.

Lastly, the Office Action states that claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over Barry in view of Driver, U.S. Patent 6,539,979 ("Driver").

Claim 14 is dependent upon amended claim 1, and it is submitted that claim 1 (as amended) is in condition for allowance per the reasons discussed above. Thus, dependent claim 14 should also be allowed.

The Barry reference is discussed in detail above. Regarding Driver, this reference discloses a process for lining an existing pipeline or conduit with a flexible liner treated with a resin. The process involves inflating an eversion bladder with air and curing the liner with flow-through steam. The bladder is stored in a pressure bladder canister coupled to a pressurized down tube and eversion elbow. There is no disclosure or suggestion in Driver for the presently claimed invention.

In view of the foregoing, it is respectfully requested that the rejection of claim 14 under 35 U.S.C. §103(a) over Barry and Driver be withdrawn.

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Conclusion

In summary, Applicants submit that claims 1-9 and 12-20 (as amended) are patentable and each of the Examiner's rejections and objections has been overcome. Accordingly, Applicants respectfully request favorable consideration and allowance of amended claims 1-9 and 12-20.

The Commissioner is hereby authorized to charge any additional fee required in connection with the filing of this paper or credit any overpayment to Deposit Account 02-0900.

Should there be any outstanding matter that needs to be resolved in the present application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully submitted,
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